

275596USXPCT.ST25  
SEQUENCE LISTING

<110> Sugiyama, Haruo  
Gotoh, Masashi  
Takasu, Hideo

<120> HLA-A24-RESTRICTED CANCER ANTIGEN PEPTIDES

<130> 275596USXPCT

<140> 10/517,600  
<141> 2004-12-13

<150> PCT/JP03/07463  
<151> 2003-06-12

<150> JP 2002-171518  
<151> 2002-06-12

<150> JP 2002-275572  
<151> 2002-09-20

<160> 68

<170> PatentIn version 3.3

<210> 1  
<211> 449  
<212> PRT  
<213> Homo sapiens

<400> 1

Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro  
1 5 10 15

Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala  
20 25 30

Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr  
35 40 45

Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro  
50 55 60

Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly  
65 70 75 80

Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe  
85 90 95

Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe  
100 105 110

Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe  
115 120 125

Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile  
130 135 140

## 275596USXPCT.ST25

Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr  
 145 150 155 160  
 Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe  
 165 170 175  
 Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln  
 180 185 190  
 Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser  
 195 200 205  
 Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp  
 210 215 220  
 Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln  
 225 230 235 240  
 Met Asn Leu Gly Ala Thr Leu Lys Gly Val Ala Ala Gly Ser Ser Ser  
 245 250 255  
 Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Ser Thr Gly Tyr Glu  
 260 265 270  
 Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile  
 275 280 285  
 His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro  
 290 295 300  
 Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys  
 305 310 315 320  
 Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys  
 325 330 335  
 Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro  
 340 345 350  
 Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp  
 355 360 365  
 Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln  
 370 375 380  
 Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr  
 385 390 395 400  
 His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys  
 405 410 415

275596USXPCT.ST25

Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val  
420 425 430

Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala  
435 440 445

Leu

<210> 2  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 2

Arg Tyr Phe Pro Asn Ala Pro Tyr Leu  
1 5

<210> 3  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 3

Arg Tyr Pro Gly Val Ala Pro Thr Leu  
1 5

<210> 4  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 4

Arg Tyr Pro Ser Cys Gln Lys Lys Phe  
1 5

<210> 5  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 5

Ala Tyr Leu Pro Ala Val Pro Ser Leu  
1 5

<210> 6  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 6

Asn Tyr Met Asn Leu Gly Ala Thr Leu  
 1 5

<210> 7  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 7

Arg Val Pro Gly Val Ala Pro Thr Leu  
 1 5

<210> 8  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 8

Arg Met Phe Pro Asn Ala Pro Tyr Leu  
 1 5

<210> 9  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 9

Arg Trp Pro Ser Cys Gln Lys Lys Phe  
 1 5

<210> 10  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 10

Gln Tyr Arg Ile His Thr His Gly Val Phe

1

5

10

<210> 11  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 11

Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe  
 1 5 10

<210> 12  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 12

Arg Tyr Phe Pro Asn Ala Pro Tyr Phe  
 1 5

<210> 13  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 13

Arg Tyr Phe Pro Asn Ala Pro Tyr Trp  
 1 5

<210> 14  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 14

Arg Tyr Phe Pro Asn Ala Pro Tyr Ile  
 1 5

<210> 15  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 15

Arg Tyr Phe Pro Asn Ala Pro Tyr Met  
1 5

<210> 16  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 16

Arg Tyr Pro Gly Val Ala Pro Thr Phe  
1 5

<210> 17  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 17

Arg Tyr Pro Gly Val Ala Pro Thr Trp  
1 5

<210> 18  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 18

Arg Tyr Pro Gly Val Ala Pro Thr Ile  
1 5

<210> 19  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 19

Arg Tyr Pro Gly Val Ala Pro Thr Met  
1 5

<210> 20  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

&lt;400&gt; 20

Arg Tyr Pro Ser Cys Gln Lys Lys Trp  
 1 5

&lt;210&gt; 21

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 21

Arg Tyr Pro Ser Cys Gln Lys Lys Leu  
 1 5

&lt;210&gt; 22

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 22

Arg Tyr Pro Ser Cys Gln Lys Lys Ile  
 1 5

&lt;210&gt; 23

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 23

Arg Tyr Pro Ser Cys Gln Lys Lys Met  
 1 5

&lt;210&gt; 24

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 24

Ala Tyr Leu Pro Ala Val Pro Ser Phe  
 1 5

&lt;210&gt; 25

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 25

Ala Tyr Leu Pro Ala Val Pro Ser Trp  
1 5

&lt;210&gt; 26

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 26

Ala Tyr Leu Pro Ala Val Pro Ser Ile  
1 5

&lt;210&gt; 27

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 27

Ala Tyr Leu Pro Ala Val Pro Ser Met  
1 5

&lt;210&gt; 28

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 28

Asn Tyr Met Asn Leu Gly Ala Thr Phe  
1 5

&lt;210&gt; 29

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 29

Asn Tyr Met Asn Leu Gly Ala Thr Trp  
1 5

&lt;210&gt; 30

&lt;211&gt; 9

&lt;212&gt; PRT



<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 30

Asn Tyr Met Asn Leu Gly Ala Thr Ile  
1 5

<210> 31

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 31

Asn Tyr Met Asn Leu Gly Ala Thr Met  
1 5

<210> 32

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 32

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
1 5 10 15

Ala Ser His Leu Glu  
20

<210> 33

<211> 3857

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 33

aagcttactc tctggcacca aactccatgg gatgattttt cttctagaag agtccaggtg	60
gacaggtaag gagtgggagt cagggagtcc agttcaggga cagagattac gggatgaaaa	120
gtgaaaggag agggacgggg cccatgccga gggtttctcc cttgtttctc agacagctct	180
tgggccaaga ttcaggggaga cattgagaca gagcgccttg cacagaagca gagggggtcag	240
ggcgaagtcc cagggcccca ggcgtggctc tcagggtctc aggccccgaa ggcggtgtat	300
ggattgggga gtcccagcct tggggattcc ccaactccgc agtttctttt ctccctctcc	360
caacctatgt agggtccttc ttcctggata ctacgacgc ggaccagtt ctactccca	420
ttgggtgtcg ggtttccaga gaagccaatc agtgctgctg cggtcgctgt tctaaagtcc	480

275596USXPCT.ST25

gcacgcaccc accgggactc agattctccc cagacgccga ggatggccgt catggcgccc	540
cgaaccctcg tcctgctact ctcgggggcc ctggccctga cccagacctg ggcaggtagag	600
tgcggggctcg ggagggaaac ggcctctgcg gggagaagca aggggcccgc ctggcggggg	660
cgcaagaccc gggaagccgc gccgggagga gggtcgggcg ggtctcagcc actcctcgtc	720
cccaggctcc cactccatga ggtatttctc cacatccgtg tcccggcccg gccgcgggga	780
gccccgcttc atcgccgtgg gctacgtgga cgacacgcag ttcgtgcggg tcgacagcga	840
cgccgcgagc cagaggatgg agccgcgggc gccgtggata gagcaggagg ggccggagta	900
ttgggacgag gagacaggga aagtgaaggc cactcacag actgaccgag agaacctgcy	960
gatcgcgctc cgctactaca accagagcga ggccggtagag tgaccccgcc ccggggcgca	1020
ggtcacgacc cctcatcccc cacggacggg ccgggtcgcc cacagtctcc ggggccgaga	1080
tccaccccgga agccgcggga ccccgagacc cttgccccgg gagaggccca ggcgccttaa	1140
cccggtttca ttttcagttt aggccaaaaa tccccccggg ttggtcgggg ccgggcgggg	1200
ctcgggggac tgggctgacc gcgggggtcgg ggccaggttc tcacaccctc cagatgatgt	1260
ttggctgcga cgtggggctcg gacgggcgct tcctccgcgg gtaccaccag tacgcctacg	1320
acggcaagga ttacatcgcc ctgaaagagg acctgcgctc ttggaccgcy gcggacatgg	1380
cggctcagat caccaagcgc aagtgggagg cggcccatgt ggcggagcag cagagagcct	1440
acctggaggg cacgtgcgtg gacgggctcc gcagatacct ggagaacggg aaggagacgc	1500
tgcagcgcac ggggtaccagg ggccacgggg cgcctacctg atcgctgta gatcctgtgt	1560
gacacacctg taccttgtcc cccagagtca ggggctggga gtcattttct ctggctacac	1620
acttagtgat ggctgttcac ttggactgac agttaatgtt ggtcagcaag gtgactacaa	1680
tggttgagtc tcaatgggtgt caccttccag gatcatacag ccctaatttt aatatgaact	1740
caaacacata ttaaattagt tattttccat tccctcctcc attctttgac tacctctctc	1800
atgctattga acatcacata aggatggcca tgtttaccca atggctcatg tggattccct	1860
cttagcttct gagtcccaa agaaaatgtg cagtcctgtg ctgaggggac cagctctgct	1920
tttggtcact agtgcgatga cagttgaagt gtcaaacaga cacatagttc actgtcatca	1980
ttgatttaac tgagtcttg gtagatttca gtttgtcttg ttaattgtgt gatttcttaa	2040
atcttcacac cagattcccc aaaggcccat gtgaccatc acagcagacc tgaagataaa	2100
gtcacctga ggtgctgggc cctgggcttc taccctgctg acatcacct gacctggcag	2160
ttgaatgggg aggagctgat ccaggacatg gagcttgtgg agaccaggcc tgcaggggat	2220
ggaaccttcc agaagtgggc atctgtggtg gtgcctcttg ggaaggagca gtattacaca	2280
tgccatgtgt accatcaggg gctgcctgag cccctcacc tgagatgggg taaggagagt	2340
gtgggtgcag agctggggc agggaaagct ggagctttct gcagaccctg agctgctcag	2400
ggctgagagc tggggctcatg accctcacct tcatttcttg tacctgtcct tcccagagcc	2460
tcctccatcc actgtctcca acatggcgac cgttgctgtt ctggttgtcc ttggagctgc	2520

275596USXPCT.ST25

aatagtcact	ggagctgtgg	tggcttttgt	gatgaagatg	agaaggagaa	acacaggtag	2580
gaaagggcag	agtctgagtt	ttctctcagc	ctcctttaga	gtgtgctctg	ctcatcaatg	2640
gggaacacag	gcacacccca	cattgctact	gtctctaact	gggtctgctg	tcagttctgg	2700
gaacttccta	gtgtcaagat	cttcctggaa	ctctcacagc	ttttcttctc	acagggtggaa	2760
aaggagggga	ctatgctctg	gctccagggt	agtgtgggga	cagagttgtc	ctggggacat	2820
tggagtgaag	ttggagatga	tgggagctct	gggaatccat	aatagctcct	ccagagaaaat	2880
cttctaggtg	cctgagttgt	gccatgaaat	gaatatgtac	atgtacatat	gcatatacat	2940
ttgttttgtt	ttaccctagg	ctcccagacc	tctgatctgt	ctctcccaga	ttgtaaagggt	3000
gacactctag	ggctctgattg	gggaggggca	atgtggacat	gattggggtt	caggaactcc	3060
cagaatcccc	tgtgagtga	tgatgggtt	ttcgaatgtt	gtcttcacag	tgatgggttca	3120
tgaccctcat	tctctagcgt	gaagacagct	gcctggagtg	gacttggtga	cagacaatgt	3180
cttctcatat	ctcctgtgac	atccagagcc	ctcagttctc	tttagtcaag	tgtctgatgt	3240
tccctgtgag	cctatggact	caatgtgaag	aactgtggag	cccagtccac	ccctctacac	3300
caggaccctg	tccctgcact	gctctgtctt	cccttcaca	gccaaccttg	ctgggttcagc	3360
caaacactga	gggacatctg	tagcctgtca	gctccatgct	accctgacct	gcaactcctc	3420
acttccacac	tgagaataat	aatttgaatg	taaccttgat	tgttatcatc	ttgacctagg	3480
gctgatttct	tgttaatttc	atggattgag	aatgcttaga	ggttttgttt	gtttgtttga	3540
ttgatttgtt	tttttgaaga	aataaatgat	agatgaataa	acttccagaa	tctgggtcac	3600
tatgctgtgt	gtatctgttg	ggacaggatg	agactgtagc	agctgagtgt	gaacagggtc	3660
gtgccgaggt	gggctcagtt	tgctttgatc	tgtgatgggg	ccacacctcc	actgtgtcac	3720
ctctgggctc	tgttccctct	atcactatga	ggcacatgct	gagagtttgt	ggtcacaaaag	3780
acacagggaa	ggcctgagcc	ttgccctgtc	cccaggatta	tgagcccca	gggctaaaga	3840
tcagagactc	ggaattc					3857

<210> 34  
 <211> 1119  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic DNA

<400> 34	
atggccgtca	60
tggcgccccg	
aaccctcgtc	
ctgctactct	
cggggggcct	
ggccctgacc	
cagacctggg	120
caggctccca	
ctccatgagg	
tatttctcca	
catccgtgtc	
ccggcccggc	
cgcggggagc	180
cccgtttcat	
cgccgtgggc	
tacgtggacg	
acacgcagtt	
cgtgcggttc	
gacagcgacg	240
ccgcgagcca	
gaggatggag	
ccgcggggcg	
cgtggataga	
gcaggagggg	
ccggagtatt	300
gggacgagga	
gacagggaaa	
gtgaaggccc	
actcacagac	
tgaccgagag	
aacctgcgga	360
tcgcgctccg	
ctactacaac	
cagagcgagg	
ccggttctca	
caccctccag	

## 275596USXPCT.ST25

```

atgatgtttg gctgcgacgt ggggtcggac gggcgcttcc tccgcgggta ccaccagtac    420
gcctacgacg gcaaggatta catcgccctg aaagaggacc tgcgctcttg gaccgcggcg    480
gacatggcgg ctcagatcac caagcgcaag tgggaggcgg cccatgtggc ggagcagcag    540
agagcctacc tggagggcac gtgctgtggac gggctccgca gatacctgga gaacgggaag    600
gagacgctgc agcgcacgga ttccccaag gcccatgtga cccatcacag cagacctgaa    660
gataaagtca ccctgaggtg ctggggccctg ggcttctacc ctgctgacat caccctgacc    720
tggcagttga atggggagga gctgatccag gacatggagc ttgtggagac caggcctgca    780
ggggatggaa ccttccagaa gtgggcatct gtggtggtgc ctcttgggaa ggagcagtat    840
tacacatgcc atgtgtacca tcaggggctg cctgagcccc tcaccctgag atgggagcct    900
cctccatcca ctgtctccaa catggcgacc gttgctgttc tggttgtcct tggagctgca    960
atagtactg gagctgtggt ggcttttctg atgaagatga gaaggagaaa cacagggtgga   1020
aaaggagggg actatgctct ggctccaggc tcccagacct ctgatctgtc tctcccagat   1080
tgtaaagtga tggttcatga ccctcattct ctagcgtga                               1119

```

<210> 35  
 <211> 372  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 35

Met Ala Val Met Ala Pro Arg Thr Leu Val Leu Leu Leu Ser Gly Ala  
 1 5 10 15

Leu Ala Leu Thr Gln Thr Trp Ala Gly Ser His Ser Met Arg Tyr Phe  
 20 25 30

Ser Thr Ser Val Ser Arg Pro Gly Arg Gly Glu Pro Arg Phe Ile Ala  
 35 40 45

Val Gly Tyr Val Asp Asp Thr Gln Phe Val Arg Phe Asp Ser Asp Ala  
 50 55 60

Ala Ser Gln Arg Met Glu Pro Arg Ala Pro Trp Ile Glu Gln Glu Gly  
 65 70 75 80

Pro Glu Tyr Trp Asp Glu Glu Thr Gly Lys Val Lys Ala His Ser Gln  
 85 90 95

Thr Asp Arg Glu Asn Leu Arg Ile Ala Leu Arg Tyr Tyr Asn Gln Ser  
 100 105 110

Glu Ala Gly Ser His Thr Leu Gln Met Met Phe Gly Cys Asp Val Gly  
 115 120 125

## 275596USXPCT.ST25

Ser Asp Gly Arg Phe Leu Arg Gly Tyr His Gln Tyr Ala Tyr Asp Gly  
 130 135 140  
 Lys Asp Tyr Ile Ala Leu Lys Glu Asp Leu Arg Ser Trp Thr Ala Ala  
 145 150 155 160  
 Asp Met Ala Ala Gln Ile Thr Lys Arg Lys Trp Glu Ala Ala His Val  
 165 170 175  
 Ala Glu Gln Gln Arg Ala Tyr Leu Glu Gly Thr Cys Val Asp Gly Leu  
 180 185 190  
 Arg Arg Tyr Leu Glu Asn Gly Lys Glu Thr Leu Gln Arg Thr Asp Ser  
 195 200 205  
 Pro Lys Ala His Val Thr His His Ser Arg Pro Glu Asp Lys Val Thr  
 210 215 220  
 Leu Arg Cys Trp Ala Leu Gly Phe Tyr Pro Ala Asp Ile Thr Leu Thr  
 225 230 235 240  
 Trp Gln Leu Asn Gly Glu Glu Leu Ile Gln Asp Met Glu Leu Val Glu  
 245 250 255  
 Thr Arg Pro Ala Gly Asp Gly Thr Phe Gln Lys Trp Ala Ser Val Val  
 260 265 270  
 Val Pro Leu Gly Lys Glu Gln Tyr Tyr Thr Cys His Val Tyr His Gln  
 275 280 285  
 Gly Leu Pro Glu Pro Leu Thr Leu Arg Trp Glu Pro Pro Pro Ser Thr  
 290 295 300  
 Val Ser Asn Met Ala Thr Val Ala Val Leu Val Val Leu Gly Ala Ala  
 305 310 315 320  
 Ile Val Thr Gly Ala Val Val Ala Phe Val Met Lys Met Arg Arg Arg  
 325 330 335  
 Asn Thr Gly Gly Lys Gly Gly Asp Tyr Ala Leu Ala Pro Gly Ser Gln  
 340 345 350  
 Thr Ser Asp Leu Ser Leu Pro Asp Cys Lys Val Met Val His Asp Pro  
 355 360 365  
 His Ser Leu Ala  
 370

<210> 36  
 <211> 36  
 <212> DNA

<213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 36  
 cccaagctta ctctctggca ccaaactcca tgggat 36

<210> 37  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 37  
 cgggagatct acaggcgatc aggtaggcgc 30

<210> 38  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 38  
 cgaggctct cacactattc aggtgatctc 30

<210> 39  
 <211> 38  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 39  
 cggaattccg agtctctgat ctttagccct gggggctc 38

<210> 40  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 40  
 aggacttga ctctgagagg cagggtctt 29

<210> 41  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Synthetic DNA  
 <400> 41  
 catagtcccc tccttttcca cctgtgagaa 30

<210> 42  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic DNA

<400> 42  
 cgaaccctcg tcctgctact ctc 23

<210> 43  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic DNA

<400> 43  
 agcatagtcc cctccttttc cac 23

<210> 44  
 <211> 39  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic DNA

<400> 44  
 cccaagcttc gccgaggatg gccgtcatgg cgccccgaa 39

<210> 45  
 <211> 41  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic DNA

<400> 45  
 ccggaattct gtcttcacgc tagagaatga gggcatgaa c 41

<210> 46  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 46  
 Pro Tyr Val Ser Arg Leu Leu Gly Ile  
 1 5

<210> 47  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 47

Ile Met Pro Lys Ala Gly Leu Leu Ile  
 1 5

&lt;210&gt; 48

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 48

Thr Tyr Ala Cys Phe Val Ser Asn Leu  
 1 5

&lt;210&gt; 49

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 49

Gln Tyr Ser Trp Phe Val Asn Gly Thr Phe  
 1 5 10

&lt;210&gt; 50

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 50

Ala Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
 1 5 10 15

&lt;210&gt; 51

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 51

Ala Leu Leu Pro Ala Val Pro Ser Leu  
 1 5

&lt;210&gt; 52

&lt;211&gt; 9

&lt;212&gt; PRT



<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 52

Asn Gln Met Asn Leu Gly Ala Thr Leu  
1 5

<210> 53

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 53

Arg Phe Phe Pro Asn Ala Pro Tyr Leu  
1 5

<210> 54

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 54

Arg Trp Phe Pro Asn Ala Pro Tyr Leu  
1 5

<210> 55

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 55

Arg Phe Pro Gly Val Ala Pro Thr Leu  
1 5

<210> 56

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 56

Arg Met Pro Gly Val Ala Pro Thr Leu  
1 5

<210> 57

<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 57

Arg Trp Pro Gly Val Ala Pro Thr Leu  
1 5

<210> 58  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 58

Arg Phe Pro Ser Cys Gln Lys Lys Phe  
1 5

<210> 59  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 59

Arg Met Pro Ser Cys Gln Lys Lys Phe  
1 5

<210> 60  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 60

Ala Phe Leu Pro Ala Val Pro Ser Leu  
1 5

<210> 61  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 61

Ala Met Leu Pro Ala Val Pro Ser Leu  
1 5

<210> 62  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 62

Ala Trp Leu Pro Ala Val Pro Ser Leu  
 1 5

<210> 63  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 63

Asn Phe Met Asn Leu Gly Ala Thr Leu  
 1 5

<210> 64  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 64

Asn Met Met Asn Leu Gly Ala Thr Leu  
 1 5

<210> 65  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 65

Asn Trp Met Asn Leu Gly Ala Thr Leu  
 1 5

<210> 66  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Peptide

<400> 66

Arg Tyr Pro Ser Ser Gln Lys Lys Phe

1

5

<210> 67  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<400> 67

Arg Tyr Pro Ser Ala Gln Lys Lys Phe  
1 5

<210> 68  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Peptide

<220>  
<221> MISC\_FEATURE  
<222> (5)..(5)  
<223> Axx = Abu

<400> 68

Arg Tyr Pro Ser Xaa Gln Lys Lys Phe  
1 5